

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/001574

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl⁷ C12N15/12, C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl⁷ C12N15/12, C12Q1/68

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
CA (STN), MEDLINE (STN), BIOSIS (STN), WPIDS (STN)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
<u>X</u> A	ZHANG J.P. et al., Alysis of gene expression profiles in human HL-60 cell exposed to cantha ridin using cDNA microarray., Int.J.Cancer., 10 January, 2004 (10.01.04), Vol.108, No.2, pages 212 to 218	<u>1, 3-5, 7-9,</u> <u>11, 12</u> 2
<u>Y</u> A	KLUGBAUER N. et al., Primary structure of a novel ABC transporter with a chromosomal localization on the band encoding the multi-drug resistance-associated protein., FEBS Lett. 1996, Vol.391(1-2), pages 61 to 65	<u>1, 3-12</u> 2
Y	EFFERTH T. et al., The human ATP-binding cassette transporter genes: from the bench to the bedside., Curr.Mol.Med., 2001, Vol.1, No.1, pages 45 to 65	1, 3-12

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
27 May, 2004 (27.05.04)

Date of mailing of the international search report
15 June, 2004 (15.06.04)

Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

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PCT/JP2004/001574

C (Continuation). . DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	TURTON N.J. et al., Gene expression and amplification in breast carcinoma cells with intrinsic and acquired doxorubicin resistance., Oncogene, 2001, Vol.20, pages 1300 to 1306	6,10
T	YASUI K. et al., Alteratin in copy numbers of genes as a mechanism for acquired drug resistance., Cancer Research, 15 February, 2004 (15.02.04), Vol.64, pages 1403 to 1410	1-12
A	ZENG H. et al., Expression of multidrug resistance protein-3 (multispecific organic anion transporter -D) in human embryonic kidney 293 cells confers resistance to anticancer agents., Cancer Res., 1999, Vol.59, No.23, pages 5964 to 5967	2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/001574

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Discussion on the inventions as set forth in claims 1 to 12 relating to ABCA3, ABCB6, ABCB8, ABCB10, ABCC4, ABCC9, ABCD3, ABCD4, ABCE1, ABCF2, BCL2L2, BCL2L10, BCL2L1 and BCL2A1 genes indicates that these inventions have a common matter of "a method of detecting amplification in a gene serving as an indication of drug resistance to a carcinostatic agent in a test cancer cell".

Referential documents 1 to 4 (see below) report methods of detecting resistance of a cancer cell to a carcinostatic agent by measuring the expression amount of an ABC transporter gene or a BCL2 family gene which relates to the resistance to a carcinostatic agent of a cancer cell. Such being the case, it appears the above common matter had been (continued to extra sheet)

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
"The inventions relating to ABCA3 in 1 to 12."

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/001574

Continuation of Box No.III of continuation of first sheet(2)

publicly known before the application of the present case. Thus, the common matter falls within the category of prior art and, therefore, cannot be considered as a special technical matter in the meaning within PCT Rule 13.2.

Thus, the inventions according to claims 1 to 12 cannot be considered as a group of inventions so linked as to form a single general inventive concept.

Referential document 1: WO 02/28894 A1
Referential document 2: Cancer Research, 2001, Vol.61, p.2827-2832
Referential document 3: American Journal of Clinical Pathology, 2000, Vol.113, p.219-229
Referential document 4: Oncogene, 2001, Vol.20, No.11, p.1300-1306

Thus, the International Searching Authority recognizes that claims 1 to 12 in the present case, as a whole, have 14 groups of inventions in total respectively relating to ABCA3, ABCB6, ABCB8, ABCB10, ABCC4, ABCC9, ABCD3, ABCD4, ABCE1, ABCF2, BCL2L2, BCL2L10, BCL2L1 and BCL2A1 genes.